Attorney Docket # 3190-53 Patent

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of

Geoffrey S.M. Hedrick

Serial No.: 10/616,208

Filed: July 8, 2003

For: Method and Apparatus for Facilitating Entry of Manually-Adjustable Data Setting in an Aircraft Cockpit

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Examiner: Huynh, Ba
Group Art: 2179

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APPEAL BRIEF

SIR:

This is appellant's appeal brief, pursuant to 37 C.F.R. §41.37, in its appeal from the decision of the Examiner in the above-identified application as set forth in the final Office Action of October 31, 2005 wherein the Examiner finally rejected appellant's claims 1 to 19. The rejected claims are reproduced in the Claims Appendix hereto. A Notice of Appeal accompanied by a Certificate of Mailing was filed on February 28, 2006.

The fee of $250.00 for filing an Appeal Brief (Small Entity) pursuant to 37 C.F.R. §41.20(b)(2) is submitted herewith. Any additional fees or charges required at this time in connection with this application may be charged to our Patent and Trademark Office Deposit Account No. 03-2412.

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REAL PARTY IN INTEREST

The assignee, Innovative Solutions & Support, Inc., of applicant, Geoffrey S.M. Hedrick, is the real party of interest in the above-identified U.S. Patent Application.

RELATED APPEALS AND INTERFERENCES

There have not previously been and are not now any other appeals and/or interferences related to the above-identified application.

STATUS OF CLAIMS

Claims 1 to 19 have been rejected and are the subject of this appeal.

STATUS OF AMENDMENTS

There have been no claim amendments filed subsequent to the final rejection in the Office Action of February 28, 2006.

SUMMARY OF CLAIMED SUBJECT MATTER

Appellant's invention is directed to a system and method for facilitating direct user entry of a manually-adjustable data setting that is normally imaged in a predetermined size on an imaging display screen in an aircraft cockpit. (See specification at p. 7, ll. 12-16) Manual setting of the user-adjustable data - such as user input of the current local barometric pressure - may for example be carried out through rotation or other user manipulation of a knob or like control element or surface, or by user-effected direct keypad entry of the data setting value, or via user-effected finger or stylus contact with a touch

control pad or surface of a flat panel display ("FPD") screen surface or face plate, or in any other manually-effected manner. (See p. 8, ll. 2-7; p. 17, l. 19 to p. 18, l. 5) In accordance with the invention, when the user-adjustable variable data setting is to be entered or adjusted or selected, the area on the FPD at which the data setting is imaged is predeterminately enlarged in size - relative to its original, normal (i.e. predetermined) display size and relative to the overall size of the FPD - *in response to user-manipulation of the control by which the variable data setting is adjustable.* (See p. 8, ll. 8-12) For example, when a pilot manipulates a control knob to adjust the particular data setting, the size of the image on the display which depicts *that* data setting may be doubled from that in which the data setting image is normally displayed on the FPD during flight or other normal operation of the aircraft. (See p. 8, l. 12 to p. 9, l. 3) As a result of this enlarged size of the displayed data, the pilot can more easily view and enter or modify or select the new or adjusted data setting as depicted on the display. (See p. 9, ll. 14-15) The attention of the pilot that must be directed to ensuring an accurate manually-effected adjustment of that particular data setting is thereby greatly reduced relative to the other tasks and operations and work load to which the pilot must still devote his or her attention in operating the aircraft. (See p. 9, ll. 15-18) The pilot's awareness and attention is moreover immediately drawn to the enlarged data image on the display, thereby minimizing the amount of time required to complete the data setting or adjustment procedure or operation. (See p. 10, ll. 6-15) The enlarged data image is thereafter returned to its original, predetermined size on the display when it is sensed that the user has *discontinued* manipulation of the control by which the data is entered or modified -- i.e. *when it is sensed that such user-effected manual manipulation of the control has ceased.*

(See p. 16, ll. 3-8; Abstract ll. 6-8) This return of the data image from its enlarged to its original or normal predetermined size may also be delayed, beyond sensing that user manipulation of the control has ceased, by a predetermined period of time. (See p. 11, ll. 14-18; p. 16, ll. 8-10; Abstract at ll. 8-9) Thus, by way of illustration, the enlargement of the data image may be maintained on the FPD screen for a period of two seconds after no further manual manipulation of the data adjustment control by the user is sensed. (See p. 11, l. 18 to p. 12, l. 6; p. 16, ll. 10-11)

Independent claim 1 is directed to a method of facilitating user entry of a manually-adjustable data setting that is normally imaged in a predetermined size on an imaging display in an aircraft cockpit (p. 7, ll. 12-16; Fig. 2), wherein the method includes the steps of manually manipulating, by the user, a control for one of adjusting the data setting and selecting the data setting to be adjusted (p. 10, l. 16 to p. 11, l. 2; p. 17, l. 19 to p. 18, l. 5); sensing said manipulating of the control by the user (p. 10, l. 16 to p. 11, l. 2; p. 18, ll. 5-6: Abstract ll. 3-6); enlarging, in response to said sensed manipulating of the control by the user, the image of the data setting on the display from the predetermined size to a predeterminately enlarged size to unambiguously direct the user's attention to the predeterminately enlarged imaged data setting to be adjusted (p. 8, ll. 8-12; p. 18, ll. 5-14; Abstract ll. 3-6); maintaining the enlarged image of the data setting on the display during said sensed manipulating of the control by the user (p. 18, ll. 15-20); and reducing the enlarged image of the data setting on the display from the predeterminately enlarged size to the predetermined size when said sensed manipulating of the control is determined to have ceased (p. 19, ll. 2-6; Abstract ll. 6-8).

Independent claim 10 is directed to an aircraft instrumentation display system for presenting to a user at least one manually-adjustable data setting normally imaged in a predetermined size and for facilitating user entry of the manually-adjustable data setting (p. 7, ll. 12-16; Fig. 1), wherein the display system includes a display for presenting the image of the at least one manually-adjustable data setting for viewing by the user (p. 7, ll. 12-21; p. 15, ll. 3-14); a user-manipulatable control for user adjustment of the manually-adjustable data setting (p. 10, l. 16 to p. 11, l. 2; p. 17, l. 19 to p. 18, l. 5); and a graphics rendering controller connected to the control and to the display (p. 15, ll. 3-7; p. 15, ll. 15-16; Fig. 1), the graphics rendering controller being operable for receiving the data setting (p. 15, ll. 3-7), imaging the data setting on the display in the predetermined size (p. 15, ll. 3-7; p. 15, ll. 15-20), in response to user-manipulation of the control, enlarging the image of the data setting on the display from the predetermined size to a predeterminately enlarged size to unambiguously direct the user's attention to the predeterminately enlarged imaged data setting to be adjusted (p. 15, l. 15 to p. 16, l. 3; p. 17, l. 21 to p. 18, l. 5), maintaining the enlarged image of the data setting on the display during said user manipulation of the control (p. 16, ll. 3-8), and reducing the enlarged image of the data setting on the display from the predeterminately enlarged size to the predetermined size when user manipulating of said control has ceased (p. 16, ll. 3-8; p. 19, ll. 2-6; Abstract ll. 6-8).

GROUNDS OF REJECTION TO BE REVIEWED

There is only a single ground of rejection to be reviewed - namely, the rejection of claims 1-19 as unpatentable under 35 U.S.C. §103(a) over U.S. patent application publication no. 2003/0132860 (Feyereisen et al) (hereinafter "Feyereisen").

ARGUMENT

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one or ordinary skill in the art, to modify the reference or to combine the reference teachings. Second there must be a reasonable expectation of success. Finally, the prior art reference (or references when combined) must teach or suggest all of the claim limitations. The teaching or suggestion to make the claimed combination and the reasonable expectation of success must both be found in the prior art, *not* in appellant's disclosure. *In re Vaeck*, 947 F.2d 488, 20 USPQ2d 1438 (Fed. Cir. 1991).

Independent Claims 1 and 10

Appellant submits that independent claims 1 and 10 are each allowable over Feyereisen, because the Feyereisen reference fails to teach or suggest: (1) that enlargement of the image of a manually-adjustable data setting on an aircraft cockpit display from an initial predetermined size to an enlarged size to unambiguously direct the user's attention to the predeterminately enlarged data setting to be adjusted takes place in

direct response to (i) sensed manipulation by the user of a control for adjusting the data setting (claim 10) or (ii) sensed manipulation by the user of a control for one of adjusting the data setting and selecting the data setting to be adjusted, and (2) that reduction of the enlarged image of the data setting on the display from the predeterminately enlarged size to the original predetermined size takes place *in response to sensing that user manipulation of the claimed control has ceased.*

The Feyereisen Published Patent Application Neither Discloses Nor Suggests Enlarging of a Manually-Adjustable Displayed Data Setting Image in Response to User Manipulation of a Control as recited in Independent Claims 1 and 10

Feyereisen discloses an aircraft cockpit imaging display, depicted in Fig. 3, in which one or more portions or parts of the information displayed on the screen "are dynamically presented in a context sensitive manner." [See Feyereisen at paragraph 0061] More particularly, "different ones of the information displays are dynamically emphasized as a predetermined function of the current mode or phase of flight." [0062] "[A} predetermined one or more of the different information displays is dynamically emphasized as a function of mode or phase of flight, with different ones of the information displays being emphasized during different modes or phases of flight." [0062] "[T]he different information displays are emphasized by metamorphosis or transformation in appearance using any of an animated size, font, shading and texture." [0064]

Thus, Feyereisen teaches that temporary transformations in appearance (such as changes in size) of selected portions of its Fig. 3 display occur *in contextual response* to "*the current mode or phase of flight*". (Emphasis supplied) In the present invention, on the other hand, a display-imaged user-adjustable data setting depicted on the display is

transformed in size *in response to the user's manual manipulation of a control that the user manipulates to adjust that particular data setting. Nothing* in Feyereisen even remotely teaches, discloses or suggests temporary transformation or changes in the size of particular data imaged on the display *in specific response to sensed user manipulation of a control that is operable for adjusting that particular data setting.* Indeed, nothing in Feyereisen teaches, discloses or suggests a change in the size of particular data that is imaged on the display in response to *any* specific user action; rather, all such data display changes in Feyereisen occur *solely* in response to an automated determination that the aircraft is in or is entering into a predetermined "mode or phase of flight", such as "taxi, take off, cruising, approach, landing and ground phases of flight", or "vertical speed (VS), indicated air speed (IAS), flight path angle (FPA), vertical navigation (VNAV), altitude hold (ALT), flight level change (FLCH) modes of flight". [0062] A predetermined one or more of the different information displays is dynamically emphasized as a function of the current mode or phase of flight, with different ones of the information displays being emphasized during different modes or phases of flight. [0062] It is simply not understood how such a focused and explicit teaching in Feyereisen of *contextual* triggering could possibly be interpreted as "inherently" including - as the Examiner contends in the final rejection - displayed data transformation in response to *any* user action or activity, let alone in response to the specific user action which is expressly recited in appellant's claims.

Independent claims 1 and 10 expressly recite that enlargement of the image of the data setting on the display from the initial predetermined size to the enlarged size to unambiguously direct the user's attention to the predeterminately enlarged data setting to be adjusted takes place in response to sensed manipulation by the user of a control for

adjusting the data setting (claims 1 and 10), or in response to sensed manipulation of a control for selecting the data setting to be adjusted (Claim 1). Feyereisen fails to teach or suggest this expressly recited limitation, and Claims 1 and 10 are accordingly patentable over Feyereisen on *at least* this basis.

The Feyereisen Published Patent Application Neither Discloses Nor Suggests Reduction of the Enlarged Image of the Manually-Adjustable Displayed Data Setting in Response to Sensing that User Manipulation of the Claimed Control has ceased, as recited in Independent Claims 1 and 10

The method and system recited in independent claims 1 and 10 is additionally patentable over Feyereisen because, as noted above, Feyereisen fails to teach or suggest that reduction of the enlarged image of the manually-adjustable data setting on the display from the predeterminately enlarged size to the original predetermined size takes place *in response to sensing that user manipulation of the control* for adjusting (claim 10) or for one of adjusting and selecting (claim 1) that data setting *has ceased.* In Feyereisen, display data is metamorphosized or transformed in response to the "current" mode or phase of flight; thus, display data is returned to its original format only when a *different* mode or phase is "current", i.e. the transformed portion of the display data is returned to its original size or condition when the Feyereisen system automatically determines that the mode or phase of flight that triggered its transformation is no longer the "current" mode or phase of flight. *Flight context alone* determines the form in which the imaged screen data is presented - i.e. emphasized, on the one hand, and deemphasized, on the other - on the display.

Independent claims 1 and 10, on the other hand, expressly recite that reduction of the enlarged image of the data setting on the display from the predeterminately enlarged

size to the original predetermined size takes place *in response to sensing that user manipulation of a control for adjusting (or selecting) the data setting has ceased.* Nothing in Feyereisen even remotely teaches, discloses or suggests that, as in the present invention, reduction of the enlarged data setting image size is triggered in response to a determination that user manipulation of the control for adjusting (or selecting) the manually-adjustable data setting has ceased.

On *at least* this basis too, therefore, the Feyereisen reference fails to teach or suggest appellant's claimed invention, and independent claims 1 and 10 are patentable over Feyereisen.

The Secondarily-Cited Amro Patent Fails to Provide Those Teachings Absent in the Feyereisen Reference

In the Section 103(a) rejection in the "final" Office Action of October 31, 2005, the Examiner states that even if Feyereisen does not teach appellant's expressly recited functionality - i.e. that (i) an image of a displayed data setting is enlarged in response to manual manipulation of a control for adjusting or selecting the data setting to be adjusted (claims 1 to 9), or in response to manual manipulation of a control for user-adjustment of the data setting (claims 10 to 19), and that (ii) the image of the displayed data setting is returned from its enlarged to its original, reduced size when user manipulation of the control has ceased - it would be obvious to provide it. In this regard, the Examiner states at p. 3 of the Office Action:

> It appears that the sensing an event related to flight operation inherently includes sensing user's manipulation of one of the instruments, e.g., setting altitude or speed (0062).[1] Even if it is not,

[1] Appellant points out that this paragraph [0062] of Feyereisen neither states nor suggests that the Feyereisen display operates in response to "sensing user's manipulation of one of the instruments, e.g.,

> enlarging a display image responsive to sensing user manipulations is well known in the art of image display (see US 6,909,439, abstract). It would have been obvious to one of skill in the art, at the time the invention was made, to combine the well known implementation of enlarging an image responsive to sensed user manipulation of the image to Feyereisen's teaching of contextual enlargement of the flight instruments. Motivation of the combine is for the ease and accuracy of user input parameters.

The Examiner is simply applying impermissible hindsight reconstruction in an attempt to demonstrate a prior art teaching that does not exist.

Nothing in Feyereisen, or in any other prior art known to appellant, teaches or suggests the functionality of appellant's claimed invention - namely, enlargement of a user-adjustable imaged data setting in response to user manipulation of a control operable to adjust the data setting, and return of the enlarged imaged data to its original image size in response to cessation of user manipulation of that control.

The secondarily cited Amro et al. (U.S. Patent No. 6,908,439) merely teaches a system and method for opening a data entry window, in response to a specific user-initiated trigger which has been defined for the express purpose of enlarging that data entry window, to facilitate stylus-based user data entry directly into the window in a handheld PDA or other reduced-size display screen. Amro teaches that such an enlarged window for receiving data entry is opened in response to the user "tapping" with a stylus on a specified portion of the screen which has been labeled to trigger enlargement of the window. The enlarged window is then removed from the screen in response to the user

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setting altitude or speed". The Feyereisen display merely *monitors* the aircraft's current altitude and speed (among other parameters) to identify the current mode or phase of flight. It does not enlarge or emphasize displayed data in response to user manipulation of a control for adjusting that data.

again "tapping" the stylus on a specified screen area which has been labeled to trigger removal of the enlarged window. As Amro explains,

> "The mechanism of the present invention provides graphical widgets displayed on a screen. A graphical widget is a graphical input mechanism that can be resized to allow easier user input. Input may be received by the graphical widget in its reduced form, but is more difficult. These graphical widgets are displayed in a predefined size and layout in these examples. These graphical widgets are small in size and not typically suitable for user input, but when selected or tapped, a graphical widget will increase or grow in size to a predetermined percentage of the size of the screen and display a small "return" or "get back" graphical widget. This return widget is used to return the graphical widget to its original size. Alternatively, instead of selecting a return widget, the user may reselect the graphical widget to cause the graphical widget to be resized to the original size." (Col. 5, ll. 42-65).

In Amro, therefore an enlarged window for receiving data entry in a PDA is opened in response to the user "tapping" with a stylus on a specified portion of the screen that is *labeled to trigger enlargement* of the window. The enlarged window is thereafter removed from the screen in response to the user again "tapping" the stylus on a specified screen area which is, again, *labeled to trigger removal* of the enlarged window. Amro does *not* teach an imaged data setting that is enlarged in response to user manipulation of a control; it merely teaches that an enlarged window is opened to receive data entry. Amro also does *not* teach that the enlarged window is closed in response to cessation of user manipulation; instead, closing of the window requires a second, additional, specific user action to *instruct* the device to close the window - namely, "tapping" of the stylus on an indicated screen area.

Thus, the combination of Feyereisen & Amro fails to remedy the failure of Feyereisen to itself teach or suggest the claimed method or system in which a data setting

on a display is enlarged, in response to sensed manipulating by the user of a control operable for adjusting the data setting or for selecting the data setting to be adjusted, from a predetermined size to a predetermined enlarged size to unambiguously direct the user's attention to the predeterminately enlarged data setting to be adjusted, and reducing the enlarged image of the data setting on the display from the predeterminately enlarged size to the predetermined size when user manipulating of the control is determined to have ceased.

Moreover, there is no, or at the very least grossly insufficient, motivation for making the combination of Feyereisen & Amro, and such combination is therefore improper.

First, the Examiner identifies the motivation for the combination as providing "ease and accuracy of user input parameters." Appellant points out that while this may well be an intended object of the Amro invention, Feyereisen is *not* directed to providing "ease and accuracy of user input parameters" but, rather, to reducing pilot workload in *monitoring* the aircraft flight instruments and systems. (See, e.g. Feyereisen Abstract) It is *appellant's* invention that provides for enhanced ease and accuracy of user input parameters, by sensing and responding to user manipulation (and the cessation of manipulation) of a control related to adjustment of a particular user-adjustable data setting. Only through impermissible hindsight reconstruction - i.e. by relying on a common objective in appellant's and the secondary reference's teaching - can any purported basis for the Examiner's proffered combination of Feyereisen and Amro be suggested.

Moreover, modification of the Feyereisen disclosure to allegedly provide those limitations of appellant's claimed invention that are missing in that reference requires the addition to Feyereisen of the essential functionality of appellant's invention - functionality

which is wholly absent in Feyereisen. Put another way, the present invention provides functionality neither taught nor suggested by Feyereisen - namely, enlargement of an imaged data setting, in response to sensed manipulating by the user of a control operable for adjusting that data setting or for selecting that data setting to be adjusted, from a predetermined size to a predetermined enlarged size to unambiguously direct the user's attention to the predeterminately enlarged data setting to be adjusted, and reducing the enlarged image of the data setting on the display from the predeterminately enlarged size to the predetermined size when user manipulating of the control is determined to have ceased. That functionality is *not* present in or suggested by Feyereisen, and the person of skill would *not* have considered or been motivated, at the time of appellant's invention, to add that "missing" functionality to the Feyereisen disclosure in the absence of knowledge of appellant's inventive disclosure. There is nothing in Feyereisen, or in Amro, to motivate wholesale modification of the Feyereisen system to provide the additional functionality provided by appellant's claimed invention - functionality neither taught nor suggested in either of those cited references.

Thus, the proffered combination of Feyereisen and Amro, in addition to not meeting the express recitations of appellant's claims, is an improper basis for an obviousness rejection of appellant's claims.

The "Control Button 42" of Feyereisen is *Not* the "Control" of Appellant's Claims

In responding to the arguments that appellant proffered in its Response of August 4, 2005 to the first Office Action of July 5, 2005 (see paragraph "2" of the "final" Office Action), the Examiner states:

> Claim 1 recites "manually manipulating, by the user, a control for one of adjusting the data setting and selecting the data setting to be adjusted". From the language of claim 1, "a control" is not necessarily an indicator or instrument as implied by the appellant. The "control" is disclosed by Feyereisen as control button 46 for selecting an operation "mode" wherein a vertical Speed indicator is displayed responsively for the pilot to manually adjust climb rate parameter (0013, 0014).

The Examiner is incorrect.

With respect to the recited "control", it is first noted that each of appellant's claims is directed to a method or apparatus for facilitating user entry of a manually-adjustable data setting that is normally imaged in a predetermined size on an imaging display in an aircraft cockpit. Each of appellant's independent claims - claims 1 and 10 - expressly defines the "control" as one that is manually manipulatable by the user to perform a specific task relating to the adjustment of that manually adjustable data setting. Thus, claim 1 recites "a control for one of adjusting the data setting and selecting the data setting to be adjusted", and claim 10 recites "a user-manipulatable control for user adjustment of the manually-adjustable data setting". The claimed "control" is thus defined in each of the claims as one that is manually manipulatable by a user to perform a specific, recited function, a function that is further tied to the remainder of the method steps (claims 1 to 9) and the apparatus limitations (claims 10 to 19) of the respective claim. As recited in appellant's claims, user manipulation of the control causes enlargement of the displayed image of the data setting to which that control relates; when the user wishes to adjust the particular data setting, manipulation of the control by which that data setting is adjusted causes the displayed image of the data setting to be enlarged to facilitate user adjustment of the data setting.

In view of this expressly recited claim limitation identifying the operative functionality of appellant's "control", the Examiner's suggestion that the "control button 46" of Feyereisen reads on the "control" recited in each of claims 1 and 10 cannot be correct.

First, the "control button 46" shown in Feyereisen Fig. 2 is *not* operable "for one of adjusting the data setting and selecting the data setting to be adjusted" (claim 1) or "for user adjustment of the manually-adjustable data setting" (claim 10). Rather, the "control button 46" (i.e. the "mode control") of Feyereisen Fig. 2 is operable by the user "to select one of a limited number of operational modes" of a prior art TCAS system, the display of which is what is depicted in Feyereisen Fig. 2. As Feyereisen explains at page 2, paragraph 0013 as "Background of the Invention":

> [0013] Display 20 includes several areas represented by rectangular boxes 36, 38, 40, 42, 44 which are areas reserved for word text displays wherein conditions of the TCAS are reported to the pilot of a host aircraft. For example, if a portion or component of the TCAS fails, a concise textual report describing the failure appears in one of rectangular boxes 36, 38, 40, 42, 44. *In another example, if the operator operates mode control 46 to select one of a limited number of operational modes, a concise textual message indicating the choice of operational mode appears in another of rectangular boxes 36, 38, 40, 42, 44. Selectable operational modes typically include a "standby" mode in which both of the host aircraft transponder systems are inactive, a "transponder on" mode in which a selected one of primary transponder and secondary transponder is active, a "traffic alert" mode in which an alert is transmitted to the protected host aircraft pilot if any Mode-C or Mode-S transponder equipped aircraft are entering a first predetermined cautionary envelope of airspace, and "traffic alert/resolution advisory" mode in which a traffic alert (TA) and/or resolution advisory (RA) is issued if any Mode-C or Mode-S transponder equipped aircraft are entering a second predetermined warning envelope of airspace. The various operational modes described above are selectable by operating mode control 46.* (Emphasis supplied)

Thus, the "control button 46" of Feyereisen Fig. 2 is operable for selecting one of the "various operational modes" of the prior art TCAS system which are described in paragraph 0013 of Feyereisen. "Control button 46" is *not* operable, as expressly recited in each of appellant's independent claims 1 and 10, "for one of adjusting the data setting and selecting the data setting to be adjusted" (claim 1), or "for user adjustment of the manually-adjustable data setting" (claim 10). Operation of the "control button 46" simply selects the way in which the user wishes the prior art TCAS system to detect and report, or to not detect (in "standby" mode), potential traffic conflicts with other aircraft.

Second, the TCAS system "operational modes" that are selectable by operating the "control button 46" of Feyereisen are *not* the same as - and, indeed, have no relation whatsoever to - the "current mode of flight" or "current phase of flight" on the basis of which Feyereisen initiates the dynamic emphasis of predetermined portions of the so-called "enhanced T" configuration of the graphically depicted flight instruments that are viewable on the display of Feyereisen Fig. 3. Operation of the "control button 46" of the Fig. 2 prior art TCAS system display has absolutely *no* effect on the dynamic emphasis of predetermined portions of the Fig. 3 display as elsewhere described by Feyereisen; "control button 46" *only* effects operation of the TCAS itself. The prior art TCAS system of Feyereisen Fig. 2 has absolutely no connection to or association with the Feyereisen Fig. 3 system and display and, indeed, nothing in Feyereisen states or suggests that the Fig. 2 prior art TCAS display is either required or intended to be present in an aircraft which includes the Feyereisen Fig. 3 display.

One of the described features of the Feyereisen Fig. 3 display interface is the ability to reduce pilot workload by dynamically emphasizing, as a predetermined function of the

current mode or phase of flight, different portions of the information displayed on the flat panel screen - what Feyereisen refers to as the "enhanced T". The prior art TCAS display depicted in Fig. 2, and the accompanying description at paragraphs 0010 to 0014 of Feyereisen, is presented by Feyereisen as "Background of the Invention" to explain the great demands placed on a pilot to operate and view and appropriately understand and appreciate the information presented on such a prior art TCAS display while, at the same time, operating the aircraft in IFR (Instrument Flight Rules) conditions in which uninterrupted attention to the primary flight instruments must be paid. (See Feyereisen 0017) By dynamically emphasizing different predetermined portions of the Feyereisen Fig. 3 display and presenting additional information (such as TCAS warnings) at appropriate locations on that display, Feyereisen seeks to reduce pilot workload in IFR conditions to levels approaching the far-less demanding workload of VFR (Visual Flight Rules) aircraft operation. (See Feyereisen 0019)

Thus, the prior art TCAS display of Feyereisen Fig. 2 is *not* part of the Feyereisen system in which selected portions of the display screen are dynamically emphasized in accordance with the current mode or phase of flight of the aircraft. User operation of the "control button 46" of the prior art TCAS display of Feyereisen Fig. 2 to select among the "various operational modes" of that TCAS system has *no* effect on when or whether particular portions of the Feyereisen display are dynamically emphasized or deemphasized. Put another way, the "operational modes" of the Feyereisen Fig. 2 TCAS which are described in paragraph 0013 of Feyereisen have *no relation whatsoever* to the "current mode or phase of flight" of the aircraft, on the basis of which selected portions of the information displayed on the Feyereisen Fig. 3 display screen are dynamically

emphasized. Neither single nor repeated user operation of the "control button 46" has *any* effect whatsoever on the current mode or phase of flight of the aircraft, or on the dynamic emphasis of predetermined portions of the Feyereisen Fig. 3 display that the reference describes.

The "control button 46" of Feyereisen Fig. 2, therefore, *cannot* properly be construed as appellant's claimed "control for one of adjusting the data setting and selecting the data setting to be adjusted" (claim 1), or "control for user adjustment of the manually-adjustable data setting" (claim 10), as therein recited and in the context of the remainder of those respective claims.

Feyereisen Does *Not* Teach Either Image Emphasis in Response to User Action or Image Deemphasis in Response to Cessation of User Action

In his response to the arguments submitted in appellant's Response of August 4, 2005 to the Office Action of July 5, 2005, the Examiner further states in paragraph "2" of the "final" Office Action:

> In response to the arguments that Feyereisen does not teach reducing the enlarged image when the sensed manipulating of the control is determined to have ceased, Feyereisen teaches that the image is contextually emphasized according to sensed mode, i.e., if the mode is changed either by the user selection of another mode or by the aircraft entering into another phase of the flight, the image return[s] to normal display.

Appellant's independent claim 1 recites that the image on the display, of the data setting to be adjusted, is enlarged from its original size in response to sensed user manipulation of a control for one of adjusting the manually-adjustable data setting and selecting the data setting to be adjusted, and that the image of the data setting is reduced

to its original size in response to a determination that the sensed manipulating of the control has ceased.

Appellant's independent claim 10 similarly recites that the image on the display, of the data setting to be adjusted, is enlarged from its original size in response to user manipulation of a control for user-adjustment of the manually-adjustable data setting, and that the image of the data setting is reduced to its original size when user manipulating of the control has ceased.

Feyereisen fails to directly or indirectly teach, or to even inferentially suggest, either enlargement (or any other "emphasis") of an imaged data setting in response to user manipulation of a control related to that data setting or its adjustment, or reduction in size (or any other de-emphasis) of an imaged data setting in response to cessation of user manipulation of such a control.

Feyereisen quite clearly describes only a *single* "trigger" or initiator of change in the dynamic emphasis of a predetermined portion of its display. As discussed above, in Feyereisen's disclosed system:

> [0062] According to the enhanced "T" portion of the invention, the dynamic presentation of the instrument displays is context sensitive, whereby different ones of the information displays are dynamically emphasized *as a predetermined function of the current mode or phase of flight*. The emphasis is provided to draw the pilot's attention to the information particularly relevant to the current phase of flight, e.g., taxi, take off, cruising, approach, landing and ground phases of flight, or the current mode of flight, e.g., vertical speed (VS), indicated air speed (IAS), flight path angle (FPA), vertical navigation (VNAV), altitude hold (ALT), [and] flight level change (FLCH) modes of flight, as well as the numerous other control parameters involving air craft attitude, speed, and thrust settings. Accordingly, *a predetermined one or more of the different information displays is dynamically emphasized as a function of mode or phase of flight, with different ones of the information displays being*

emphasized during different modes or phases of flight. (Emphasis supplied)

The dynamic emphasis of a predetermined portion of the Feyereisen display is thus initiated *in response to a change in the "mode or phase of flight"* of the aircraft - *not* in response to user-manipulation of a manually-operable control specifically related to that data setting whose image is to be emphasized on the display.

Feyereisen also explains, in paragraph 0137, the manner in which the Feyereisen system determines or identifies the current mode or phase of flight - i.e. the "trigger" or initiator of Feyereisen's dynamic emphasis of a predetermined portion of its information display screen:

> [0137] The machine instructions drive the processor 306 *to operate an algorithm for determining a current mode or phase of flight as a function of the several instrument information signals available on the data bus 302 that are indicative of different flight parameters.* The machine instructions further drive the processor 306 to operate an algorithm for dynamically emphasizing one or more of the different information displays as a function of the current mode or phase of flight by metamorphosis or transformation in appearance using any of animated size, font, shading and texture, as discussed herein. (Emphasis supplied)

Thus, Feyereisen expressly and unambiguously teaches - in contrast with appellant's claimed invention in which sensed manual user manipulation of a "control for one of adjusting the data setting and selecting the data setting to be adjusted" (claim 1), or a "control for user adjustment of the manually-adjustable data setting" (claim 10), initiates enlargement of the image of the data setting on the display - that dynamic emphasis of a predetermined portion of the Feyereisen Fig. 3 display is initiated by an *automated determination* of the *current mode or phase of flight* based on an *algorithm* that monitors various information signal inputs to the Feyereisen display. *Nothing* in Feyereisen

describes or suggests *any* other way of or basis for initiating the dynamic emphasis of a predetermined portion of its display, and most assuredly *nothing* in Feyereisen describes or suggests that the dynamic emphasis of a predetermined portion of its display is or might or could or should be initiated by the user's manual operation of a control related to the portion of the display to be emphasized, as is expressly recited in each of independent claims 1 and 10 of the present application.

Neither - just as importantly - does Feyereisen teach or suggest the return of the dynamically emphasized portion of its display to a de-emphasized condition *in response to a determination that user manipulation of appellant's claimed manually-manipulatable control has ceased* - as is recited in appellant's claims. Indeed, de-emphasis of a dynamically emphasized portion of the Feyereisen display takes place *only* when it is determined - again by applying an automated algorithm to an analysis of the input signals to the Feyereisen display - that the current mode or phase of flight of the aircraft *has changed to a new mode or phase of flight.* (See paragraph 00137 of Feyereisen). De-emphasis of the currently emphasized portion of the Feyereisen display accordingly takes place only when the Feyereisen system determines that a *different* portion of the display should be emphasized because the aircraft has begun a *different* mode or phase of flight - *not* because a user has ceased manipulation of a user-adjustable control related to the particular imaged data setting that is currently emphasized.

In sum, Feyereisen fails to disclose or suggest or render obvious - alone or in combination with any other prior art - the claimed method or system in which a data setting on a display is enlarged, in response to sensed manipulating by the user of a control operable for adjusting the data setting or for selecting the data setting to be adjusted, from a

predetermined size to a predetermined enlarged size to unambiguously direct the user's attention to the predeterminately enlarged data setting to be adjusted, and reducing the enlarged image of the data setting on the display from the predeterminately enlarged size to the predetermined size when user manipulation of the control is determined to have ceased.

For the foregoing reasons, it is respectfully submitted that Feyereisen, with or without the additional teachings of Amro, fails to establish a *prima facie* case of obviousness with regard to the subject matter recited in independent claims 1 and 10. The Final Rejection of independent claims 1 and 10 should accordingly be reversed.

Dependent Claims

Dependent claims 2 to 6, 8 and 9 - which depend from claim 1 - and dependent claims 11 to 15 and 17 to 19 - which depend from claim 10 - are deemed allowable for the same reasons expressed above with respect to independent claims 1 and 10.

Dependent claim 7, which depends from method claim 1, recites the further step of presenting the enlarged image of the data setting on the display in a degree of translucence selected to permit concurrent viewing by the user of another image presented at a location on the display that is at least party overlaid by the enlarged image of the data setting (p. 9, ll. 4-13; p. 16, ll. 11-17). Dependent claim 16, which depends from system claim 10, correspondingly recites that the graphics rendering controller is further operable for presenting the enlarged image of the data setting on the display in a degree of translucence selected to permit concurrent viewing by the user of another image

presented at a location on the display that is at least partly overlaid by the enlarged image of the data setting (p. 9, ll. 4-13; p. 16, ll. 11-17).

In rejecting claims 7 and 16 in the "final" Office Action of October 31, 2005 as unpatentable over Feyereisen under 35 U.S.C. 103(a), the Examiner states at p. 4:

> The enlarged image is displayed [in Feyereisen] overlaying with a degree of translucense overlaying another image allowing the other image to be viewed (fig. 3).

The Examiner further states, in paragraph "2" (pp. 5-6) of the "final" Office Action:

> In response to the argument that Feyereisen does not teach the translucently overlaying of the selected indicator, the limitation is disclosed in Figure 3 wherein Altitude and Airspeed indicators are displayed translucently over background images.

The Examiner's analysis of Feyereisen Fig. 3 is in error.

A close examination of the enlarged airspeed pointer 122 and the enlarged altitude pointer 130 in Feyereisen Fig. 3 reveals that neither is in fact depicted as being at all translucent. Were each of those areas translucent, all of the "background" details would be at least partially viewable in the enlarged areas. For example, if the enlarged airspeed pointer 122 were translucent, one should be able to see within the enlargement the lower portion of the airspeed trend indicator 124 that the enlarged point partially overlies, the remainder of the airspeed indicator digits "120" that the enlarged pointer 122 partially overlies, and the overlaid portion of the ruler-type scale - defined by a series of alternating long and short horizontal lines - of the airspeed indicator 120 that appears directly to the right of the numbers "100" , "110", "120", "130", and "140" in Feyereisen Fig. 3. Instead, the only "background" features that can be seen in the enlarged pointers 122 and 130 are the extensions of the horizon line 107 and of the two parallel horizontal lines immediately

therebelow. The only logical conclusion that can be drawn is that those line extensions, rather than being viewable "through" translucent enlarged pointers 122, 130, have instead simply been recreated or redrawn as a part of the overlaid enlarged pointers for clarity and to reduce pilot workload.

Neither is there any teaching or discussion or mention in the written description of Feyereisen that states or even remotely suggests that emphasized portions of the Feyereisen display, as depicted in Feyereisen Fig. 3 or otherwise, are presented in a degree of translucence selected to permit concurrent viewing by the user of another image presented at a location on the display that is at least party overlaid by the enlarged image of the data setting, as appellant's claims 7 and 16 recite.

Thus, Feyereisen does *not* teach or suggest the recited subject matter of claims 7 and 16 of the present application, in each of which the enlarged image of the data setting is stated to have "a degree of translucence selected to permit concurrent viewing by the user of another image presented at a location on the display that is at least partly overlaid by the enlarged image of the data setting."

Accordingly, dependent claims 7 and 16 are allowable both because they depend from allowable independent claims 1 and 10, on this additional basis as well.

The Final Rejection of dependent claim 2 to 9 and 11 to 19 should thus be reversed.

CONCLUSION

For the foregoing reasons, it is respectfully submitted that appellant's claims are not rendered obvious by and are, therefore, patentable over the priori art of record, and the Examiner's rejections should accordingly be reversed.

Respectfully submitted,

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CLAIMS APPENDIX

Claim 1 (original): A method of facilitating user entry of a manually-adjustable data setting normally imaged in a predetermined size on an imaging display in an aircraft cockpit, comprising the steps of:

manually manipulating, by the user, a control for one of adjusting the data setting and selecting the data setting to be adjusted;

sensing said manipulating of the control by the user;

enlarging, in response to said sensed manipulating of the control by the user, the image of the data setting on the display from the predetermined size to a predeterminately enlarged size to unambiguously direct the user's attention to the predeterminately enlarged imaged data setting to be adjusted;

maintaining the enlarged image of the data setting on the display during said sensed manipulating of the control by the user; and

reducing the enlarged image of the data setting on the display from the predeterminately enlarged size to the predetermined size when said sensed manipulating of the control is determined to have ceased.

Claim 2 (original): The method of claim 1, wherein said predetermined enlargement comprises an approximate doubling of the predetermined size of the image of the data setting on the display.

Claim 3 (original): The method of claim 1, further comprising the step of presenting on the display an imaged frame encircling the enlarged data setting image to

further unambiguously direct the user's attention to the imaged data setting to be adjusted.

Claim 4 (original): The method of claim 1, wherein the imaged data setting comprises a graphical representation on the display of a parameter having a value to be adjusted, said enlarging step further comprising enlarging at least a portion of the graphical representation at which the adjusted value is graphically imaged.

Claim 5 (original): The method of claim 4, further comprising the step of presenting on the display an imaged frame encircling the enlarged portion of the graphical representation to further unambiguously direct the user's attention to the imaged data setting to be adjusted.

Claim 6 (original): The method of claim 1, wherein the imaged data setting comprises an alphanumeric setting adjustable within a predetermined range and imaged on the display as an alphanumeric value, further comprising the step of presenting on the display a graphical representation of at least a portion of the predetermined range proximate the alphanumeric value of the imaged data setting to provide the user with a readily-discernable graphical representation of a scale of the data setting and of a current value of the data setting along the scale as the data setting is adjusted.

Claim 7 (original): The method of claim 1, further comprising the step of presenting the enlarged image of the data setting on the display in a degree of translucence selected to permit concurrent viewing by the user of another image

presented at a location on the display that is at least partly overlaid by the enlarged image of the data setting.

Claim 8 (original): The method of claim 1, wherein said reducing step comprises reducing the enlarged image of the data setting on the display, from the predeterminately enlarged size to the predetermined size, a predetermined time interval after said sensed manipulating of the control is determined to have ceased.

Claim 9 (original): The method of claim 8, wherein the predetermined time interval is in the range of approximately 2 seconds to 4 seconds.

Claim 10 (original): An aircraft instrumentation display system for presenting to a user at least one manually-adjustable data setting normally imaged in a predetermined size and for facilitating user entry of the manually-adjustable data setting, comprising:

a display for presenting the image of the at least one manually-adjustable data setting for viewing by the user;

a user-manipulatable control for user adjustment of the manually-adjustable data setting; and

a graphics rendering controller connected to the control and to the display and operable for:

receiving the data setting,

imaging the data setting on the display in the predetermined size,

in response to user-manipulation of the control, enlarging the image of the data setting on the display from the predetermined size to a predeterminately

enlarged size to unambiguously direct the user's attention to the predeterminately enlarged imaged data setting to be adjusted,

maintaining the enlarged image of the data setting on the display during said user manipulation of the control, and

reducing the enlarged image of the data setting on the display from the predeterminately enlarged size to the predetermined size when user manipulating of said control has ceased.

Claim 11 (original): The display system of claim 10, wherein said predetermined enlargement comprises an approximate doubling of the predetermined size of the image of the data setting on the display.

Claim 12 (original): The display system of claim 10, wherein said graphics rendering controller is further operable for presenting on the display an imaged frame encircling the enlarged data setting image to further unambiguously direct the user's attention to the imaged data setting to be adjusted.

Claim 13 (original): The display system of claim 10, wherein the imaged data setting comprises a graphical representation on the display of a parameter having a value to be adjusted, and wherein said graphics rendering controller is operable to enlarge, in response to user-manipulation of the control, the image of the data setting on the display by enlarging at least a portion of the graphical representation at which the adjusted value is graphically imaged.

Claim 14 (original): The display system of claim 13, wherein said graphics rendering controller is further operable for presenting on the display an imaged frame encircling the enlarged portion of the graphical representation to further unambiguously direct the user's attention to the imaged data setting to be adjusted.

Claim 15 (original): The display system of claim 10, wherein the imaged data setting comprises an alphanumeric setting adjustable within a predetermined range and imaged on the display as an alphanumeric value, and wherein said graphics rendering controller is further operable for presenting on the display a graphical representation of at least a portion of the predetermined range proximate the alphanumeric value of the imaged data setting to provide the user with a readily-discernable graphical representation of a scale of the data setting and of a current value of the data setting along the scale as the data setting is adjusted.

Claim 16 (original): The display system of claim 10, wherein said graphics rendering controller is further operable for presenting the enlarged image of the data setting on the display in a degree of translucence selected to permit concurrent viewing by the user of another image presented at a location on the display that is at least partly overlaid by the enlarged image of the data setting.

Claim 17 (original): The display system of claim 10, wherein said graphics rendering controller is operable for reducing the enlarged imaged of the data setting on the display by reducing the enlarged image of the data setting on the display, from the predeterminately enlarged size to the predetermined size, a predetermined time interval after user manipulating of the control has ceased.

Claim 18 (original): The display system of claim 17, wherein the predetermined time interval is in the range of approximately 2 seconds to 4 seconds.

Claim 19 (original): The display system of claim 10, wherein said display comprises a flat panel display.

EVIDENCE APPENDIX

None.

RELATED PROCEEDINGS APPENDIX

None.